

SECTION 16710

PULL BOXES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pull boxes of the various types and sizes required complete with lids.

1.02 MEASUREMENT AND PAYMENT

A. Unit Prices

1. Payment for this item will be measured as each ground box and or extension by type, complete in place. Concrete aprons, if required, will be measured as each pull box with concrete apron, complete, in place.
2. Payment for the work performed and materials furnished in accordance with this item will be paid for at the unit price bid for "Pull Boxes" of the various types and sizes specified. The price shall be full compensation for excavating and backfilling; for constructing, furnishing and installing the pull boxes and concrete rings when required; for concrete and reinforcing steel; and for all labor, tools, equipment and incidentals necessary to complete the work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Provide new materials that comply with the details shown on the plans and the requirements of this specification.
- B. All pull boxes shall be constructed of polymer concrete consisting of sand and aggregate bound together with a polymer resin. Internal reinforcement may be provided by means of steel, fiberglass, or a combination of both. Chopped fiberglass, polyethylene, or polystyrene are not allowed for internal reinforcement.
- C. The material used to shall have the following minimum allowable properties:
 - Compressive Strength: 10,000 psi
 - Flexural Strength: 7,000 psi
 - Tensile Strength: 1,500 psi

PART 3 EXECUTION

3.01 INSTALLATION

A. General

1. Installations shall be in commercial and residential sidewalks and behind curbs where no deliberate traffic is planned.
2. Pull boxes and extensions shall be furnished in the following nominal sizes (Width X Length X Depth):

Type	Purpose	Dimensions
A	Detector Loops & Hardwire Interconnect	13" x 18" x 24"
B	Standard traffic signal pull box, but also used for detector loops where multiple loops enter the pull box	17" x 30" x 24" 17" x 30" x 12" (Extension)
C	Standard pull box used for most communications applications, or where a larger pull box is needed due to multiple conduits	26" x 38" x 24" 26" x 38" x 12" (Extension)

3. Each enclosure shall be designed and constructed flush to grade with the cover fitting flush to the box.
4. Each enclosure shall be suitable for installation in either direct or buried native soil, embedded in concrete or embedded in asphalt surfacing. A concrete collar shall be furnished for each installation in asphalt, or where called for on the plans.
5. All enclosures shall withstand shipping and installation practices without chipping, cracking, or structural damage. Any pull box damaged, or cracked, during installation shall be replaced by the Contractor.
6. All pull box covers shall be equipped with a minimum of two stainless steel lockdown mechanisms. Multiple piece covers shall be equipped with a means of interlocking with each other, or each section shall be secured with two stainless steel lockdown mechanisms. Tools to unlock the covers shall be furnished. A minimum of one (1) tool shall be furnished with each ten (10) pull boxes supplied. All covers shall have a logo recessed into the cover with the legend, "TRAFFIC SIGNAL" in two-inch minimum height letters, or other as specified by the City of Houston.

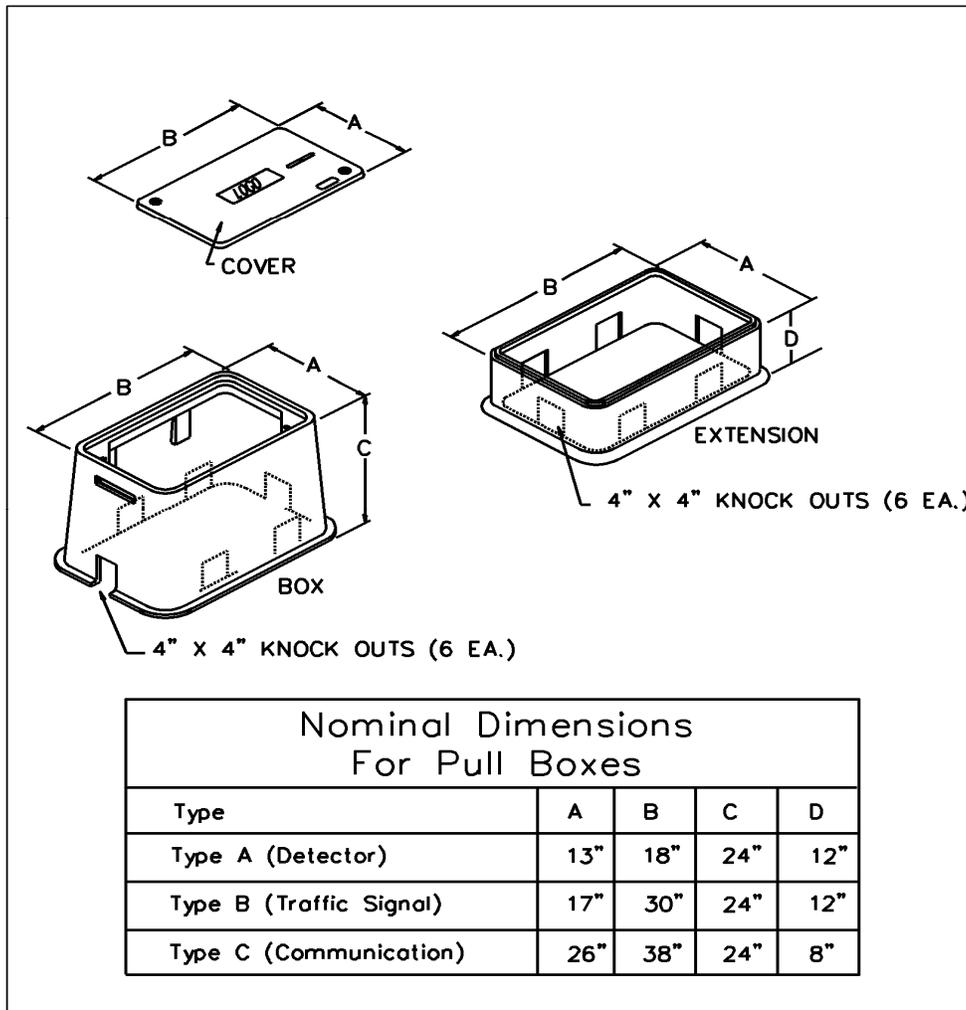
7. All covers shall have a recessed access point to allow removal of the cover with a special lifting tool. One lifting tool shall be furnished with each ten (10) pull boxes. The access point shall be located and designed to allow the maximum amount of leverage and safety possible.
8. Pull boxes shall be designed and suitable for installation and use through a temperature range of -40 degrees C to 60 degrees C.
9. Material Safety Data Sheets (MSDS) must be attached in a weather tight vessel on each order.
10. A certified copy of all test reports shall be signed and sealed by a registered State of Texas Professional Engineer and submitted prior to receipt of shipment.
11. All pull boxes and covers shall be rated for a static vertical design load of 15,000 pounds, minimum. All pull boxes must pass a minimum static vertical load test of at least 22,500 pounds. A physical description of the testing methods shall be included with the test reports. Load versus deflection curves shall be provided.
12. All pull boxes shall be capable of supporting a lateral load, design bearing pressure, of 600 pounds per square foot. Lateral load testing shall be applied to the longest dimension. The load shall be transmitted by a flat, rigid plate 24 inches wide by the depth dimension of the enclosure, bearing against any suitable medium which will conform to the shape and angle of the enclosure sidewall to achieve uniform loading.
13. Pull box Vertical Load Testing: The 15,000 pounds design load and 22,500 pounds testing load shall be distributed over a 5 inch by 10 inch area. All covers shall be tested, installed on a typical pull box. The loading pad shall be centered on the part of the cover that will produce the maximum deflection under load. A deflection-measuring device shall be used to measure deflection. Deflection under design load shall not exceed:

Cover ½ inch
Pull box ¼ inch per foot of pull box length.
14. Permanent deflection of the cover or pull box shall not interfere with the placement or removal of the cover.
15. All covers shall be skid resistant and should have a minimum coefficient of friction of 0.50 on the top surface of the cover.
16. Any point on the cover must be able to withstand a 70 foot-pound impact with a 12-pound weight having a "C" Tup (ASTM D-2444) without puncturing or splitting.

17. Installation of the pull boxes shall be in conformance with the details shown on the plans.
 When shown on the plans, a concrete ring or apron shall be provided.

3.02 CONDUIT ENTRANCE TO PULL BOX

A. Hydraulic conduit entrance punchout tools or equivalent shall be used to provide necessary entrances to pull boxes leaving a clean surface area for the insertion of conduit.



END OF SECTION